DEPARTMENT OF THE ARMY
TECHNICAL MANUAL

TM 11-5512

DEPARTMENT OF THE AIR
FORCE TECHNICAL ORDER

TO 16-35TS578-5

DECADE RESISTOR TS-578B/U

DEPARTMENTS OF THE ARMY AND THE AIR FORCE

OCTOBER 1952

DECADE RESISTOR TS-578B/U

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CHAPTER 1
INTRODUCTION

Section I. GENERAL

1. Scope

a. These instructions are published for the information and guidance of the personnel to whom this equipment is issued. They contain a description of the equipment; information on operation, organizational maintenance, and theory; instructions for removing the equipment from service and repacking for shipment or limited storage; and instructions for demolishing the equipment to prevent enemy use. They apply only to Decade Resistor TS-578B/U.

b. The appendix contains a list of references.

2. Forms and Records

The following forms will be used for reporting unsatisfactory conditions of Army equipment and in performing preventive maintenance:

a. DD Form 6, Report of Damaged or Improper Shipment, will be filled out and forwarded as prescribed in SR 745-45-5 (Army), NAV DEPT SERIAL 85POO (Navy), and AFR 71-4 (Air Force).

b. DA AGO Form 468, Unsatisfactory Equipment Report, will be filled out and forwarded to the Office of the Chief Signal Officer, as prescribed in SR 700-45-5.

c. AF Form 54, Unsatisfactory Report, will be filled out and forwarded to Commanding General, Air Materiel Command, Wright-Patterson Air Force Base, Dayton, Ohio, as prescribed in SR 700-45-5 and AFR 65-26.

d. Use other forms and records as authorized.

Section II. DESCRIPTION AND DATA

3. Description of Decade Resistor TS-578B/U (fig. 1)

a. GENERAL. Decade Resistor TS-578B/U (Sig C stock No.3F1800-1) provides a source of variable resistance between 1 ohm and 111,110 ohms in steps of 1 ohm. It consists of five decade resistance units mounted on the under side of an aluminum panel, and an aluminum cabinet to which the panel is fastened by six screws. Both panel and cabinet are finished in black. On the panel face are five bar knobs with labeled settings, a pair of insulated binding-post terminals, and a single ground binding post.

b. APPLICATION. Decade Resistor TS-578B/U is designed primarily to

provide accurate resistance values for calibration of bridges and meters, and to load or terminate a-f (audio-frequency) and r-f (radio-frequency) circuits. It may be used equally well for other applications where a precision, low-current-carrying resistor is required.

c. DIMENSIONS. The resistor is 5 inches wide by 4-7/8 inches high by 15 inches long. Unit weight is 8 pounds, and unit volume is 366 cubic inches.

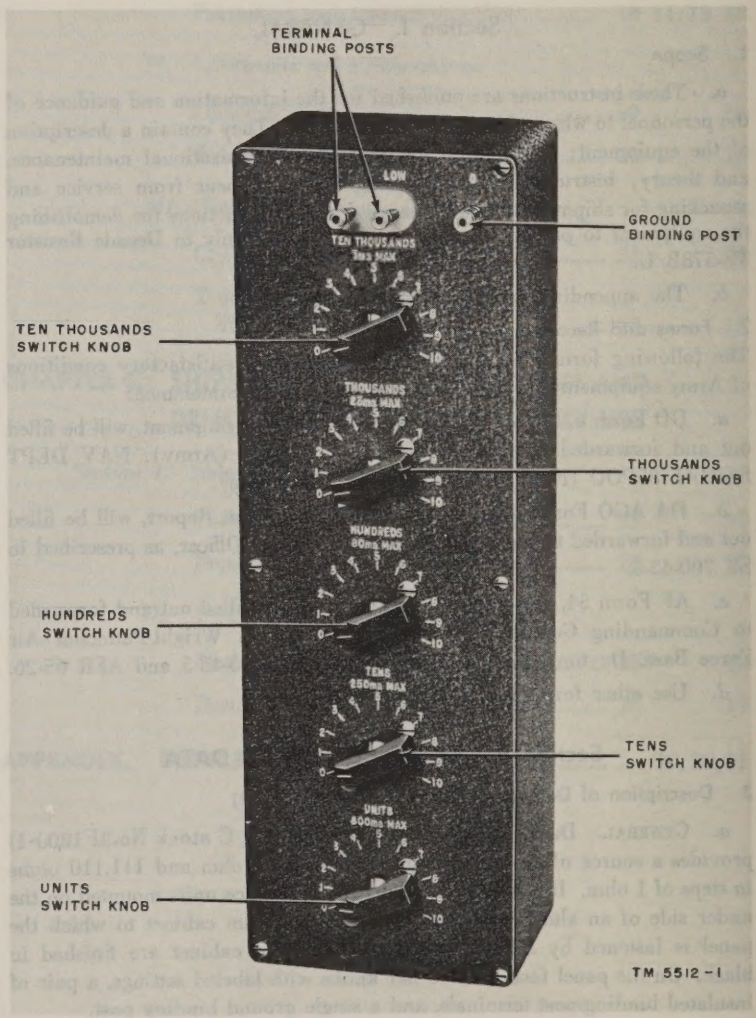


Figure 1. Decade Resistor TS-578B/U, view of panel.

4. Technical Characteristics

Maximum zero d-c (direct-current) resistance .....0.015 ohm.

Resistor windings .....manganin wire with a temperature coefficient of ±.002 percent per degree between 20° C and 100° C.

Switches .....rotary; 11 silver alloy contacts, contact resistance between .002 and .003 ohm; effective capacitance less than 5 uuf.

Decade units:

Decade (ohm)	Steps	Ohms per step	Accuracy* (percent)	Maximum current (ma)	Maximum inductance (mh)
10	10	1	±.25	800	.056
100	10	10	±.1	250	.11
1,000	10	100	±.1	80	.29
10,000	10	1,000	±.1	23	3.3
100,000	10	10,000	±.1	7	9.5

* These accuracies hold for temperatures from 32° F to 132° F for dc, and for ac (alternating current) up to 50 kc (kilocycles).

CHAPTER 2
OPERATING INSTRUCTIONS

SECTION I. SERVICE UPON RECEIPT OF EQUIPMENT

5. Checking Equipment

Note. Save packing and packaging materials, if poss'ble.

After the resistor has been unpacked, inspect it carefully for damage that may have been incurred before or during shipment.

a. Be sure that all knobs are mounted securely and that they operate without binding.

b. Examine the binding posts to see that they have not been bent or loosened.

c. Tighten any of the six panel screws that is loose.

6. Preparation for Use

After the resistor has been unpacked and inspected, it is ready for use. Connect it to any circuit or apparatus in accordance with the operating instructions (sect. 3).

SECTION II. CONTROLS AND TERMINALS

7. Switch Knobs (fig. 1)

Five black bar knobs, each with a white indicator line, are arranged in a single row down the center of the panel. These knobs are labeled, respectively, from the top of the panel: TEN THOUSAND 7ma MAX, THOUSANDS 23ma MAX, HUNDREDS 80ma MAX, TENS 250ma MAX, and UNITS 800ma MAX. Marked in a semicircle around each knob are the switch settings, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10. All labels and markings are engraved in white directly on the panel. The knobs permit the operator to adjust Decade Resistor TS-578B/U to various values of resistance.

8. Terminals (fig. 1)

At the top center of the panel are two jack-top binding posts mounted on a common plate insulator; the binding post to the right is marked LOW. These binding posts serve as terminals by which the resistor is connected to an external circuit. At the upper right-hand corner of the panel is a single jack-top binding post marked G. The resistor may be connected to ground through this terminal to prevent pick-up of an a-c electrostatic field. Binding posts may be used with either solid or stranded wire leads or banana connector plugs.

Section III. OPERATION

Caution: When Decade Resistor TS-578B/U is used in a-f or r-f circuits, it must be grounded through the G binding post (fig. 1). The ground should be preferably a copper plate buried at least 3 to 4 feet deep in moist soil; however, a water pipe, a hot water radiator, or part of the structural steel of a building may be used. In the field, where no ground is readily available, a 4- or 5-foot length of copper rod driven into wet or soggy earth may be used.

9. Precautions

a. To avoid burning out or damaging any of the resistor units, *always check the maximum current or voltage to be applied before connecting Decade Resistor TS-578B/U in a circuit.* If the voltage or current to be applied is not known, measure it. Maximum permissible current values are marked on the panel above each switch knob. To determine maximum permissible voltage per decade, multiply total resistance of the decade by maximum current. For example: voltage for the 1-ohm-per-step decade is 10 times 0.8, or 8 volts; for the 10-ohm-per-step decade, it is 100 times 0.25, or 25 volts. *Remember that these voltages are permissible only when all 10 resistors of the decade are in the circuit.* If only nine of the decade resistors are in the circuit, only nine-tenths of the voltage is permissible; if only half the resistors are in the circuit, only half of the voltage is permissible. It is good practice to start with all resistors of a decade in the circuit and to reduce the value gradually until the desired resistance is reached.

b. If there is a possibility that the voltage to be applied is higher than permissible, do not under any circumstances connect the resistor to the circuit. An over-voltage lasting only a few seconds may completely ruin the precision of the individual resistors and impair the accuracy of the entire decade. If the test set-up is such that the applied voltage can be regulated, begin with zero voltage and increase it to the desired value. As a simple and effective precaution, connect an ordinary carbon resistor of about 100,000 ohms in series with the decade resistor; after connections have been made and the circuit tested to insure that no over-voltage will be applied, remove the carbon resistor from the circuit.

10. Adjusting Decade Resistor TS-578B/U

The decade resistor is adjusted to various values of resistance by means of the five knobs on the panel (fig. 1). All five decade units are connected in series (fig. 3) so that the actual reading across the terminals is obtained by adding the readings of the five dials. For all practical applications, the zero setting of any dial is considered as zero resistance. To change the value of resistance from 0 to 10 ohms, adjust the setting of the UNITS knob between 0 and 10. The 1 setting indicates a value of 1 ohm; the 5 setting, 5 ohms,

etc. Similarly, the TENS knob may be adjusted between 0 and 100 ohms, the HUNDREDS knob between 0 and 1,000 ohms, the THOUSANDS knob between 0 and 10,000 ohms, and the TEN THOUSANDS knob between 0 and 100,000 ohms.

Example: To set Decade Resistor TS-578B/U at 9,783 ohms, adjust the UNITS knob to 3, the TENS knob to 8, the HUNDREDS knob to 7, and the THOUSANDS knob to 9. Leave the TEN THOUSANDS knob at 0.

11. Using Decade Resistor TS-578B/U as a Standard Resistor

To use the decade resistor as a standard resistor, proceed as follows:

a. Be sure that the voltage to be applied is within the permissible range (par. 9).

b. Set up the desired resistance value on the decade-resistor dials, and connect the resistor to the external circuit by means of the two binding posts at the top center of the panel (fig. 1).

Note. Any other resistance value may be set up while the decade resistor is connected to the circuit provided that the voltage will not be too high. At 50 ohms, for instance, the permissible voltage will be 12.5 volts, but at 1 ohm it will be only .8 volt.

12. Using Decade Resistor TS-578B/U as a Load or Terminating Resistor

a. When Output Impedance Is Known. Set the decade resistor at a resistance value equal to output impedance of the equipment to which it is to be connected. Load resistance must always be equal to output impedance if maximum output power is to be delivered. In most cases, the output impedance is known. With the two insulated binding posts as terminals, connect the decade resistor to the circuit in which it is to serve as a load or terminating resistance.

b. When Output Impedance Is Not Known. When output impedance is not known, measure it by connecting an output meter or a milliammeter of the proper current-carrying capacity to the external circuit.

(1) If an output meter is used, adjust the meter impedance control until maximum output in mw (milliwatts) or db (decibels) is obtained. The impedance value for which the meter is set when output is greatest is the proper load resistance. Disconnect the output meter; set the decade resistor at proper load resistance value and connect it to the circuit.

(2) If a milliammeter is used, connect the decade resistor, as well as the milliammeter, to the external circuit. Then measure output at several different values of load resistance, alternately setting the decade resistor and measuring the current. Output power is the resistance times the square of the current in amperes. The greatest output will be obtained at the proper value of load resistance. After the proper resistance has been determined,

set the decade resistor at that value, and disconnect the milliammeter from the circuit.

Note. If the impedance to be determined is entirely unknown, measure the output at large resistance intervals. For example, measure the output of an amplifier at 50, 150, 250, and 500 ohms. If the output at 250 ohms is greater than at any of the other values used, measure output at 200 and 300 ohms. If output is still maximum at 250 ohms, measure at 240 and 260 ohms. If 250 ohms still provides maximum output, it is the proper terminating resistance.

13. Using Decade Resistor TS-578B/U to Check Resistors by Substitution

a. If the value of the unknown resistor can be estimated approximately, proceed as follows:

(1) Obtain a milliammeter and a battery. Determine that current will be within the meter range by dividing the battery voltage by the estimated value of the resistor. If necessary, change the battery voltage.

(2) Connect the unknown resistor in series with the battery and milliammeter.

(3) Read current on the milliammeter scale, and make a note of the current value.

(4) Turn all knobs of Decade Resistor TS-578B/U to maximum. Disconnect the unknown resistor, and connect the decade resistor in series with the battery.

(5) Beginning with the TEN THOUSANDS knob, turn resistance of the decade resistor down gradually until the current reading noted in subparagraph (3) above is obtained on the meter. Reading of the decade resistor at this point is the value of the unknown resistor.

b. If the value of the unknown resistor cannot be estimated, proceed as follows:

(1) Connect Decade Resistor TS-578B/U, with all decades set at maximum, in series with the unknown resistor.

(2) Connect a battery and milliammeter in series with both resistors.

(3) While watching the current reading of the meter, turn the resistance of Decade Resistor TS-578B/U down gradually (subpar. a(5)). If all decades can be reduced to zero without causing the current reading to go off full scale, leave the decade resistor at zero and note the current reading.

Note. If the resistance to be measured is of such high value that no readable current flows through the milliammeter, use a microammeter. If the decade resistor cannot be reduced to zero before the meter goes off full scale, use an ammeter. In any case, be sure not to overload either the meter or the decade resistor.

(4) Turn all decades of Decade Resistor TS-578B/U to maximum again, and short out the unknown resistor or disconnect it.

(5) Gradually reduce resistance of the decade resistor (subpar. a(5)) until the current reading is the same as that noted in subparagraph (3) above. The value of the unknown resistor is the same as the reading of the decade resistor at this point.

14. Using Decade Resistor TS-578B/U to Test and Calibrate Meters

Decade Resistor TS-578B/U may be used in the repair of electrical measuring and indicating instruments To use a decade resistor in testing and calibrating meters, refer to TM 11-2535A.

15. Operation under Unusual Conditions

To maintain rated accuracy of the decade resistor, keep the operating temperature between 32° F and 132° F. The resistor will, in general, perform satisfactorily under extreme climatic conditions if reasonable precautions are followed to keep it clean and protected when not in use. If the resistor is to be used at temperatures under 0° F, apply a small amount of Grease, Instrument (GL) over the face of switch contacts, and rotate the switches back and forth a few times to see that they move easily. See paragraph 20 for weatherproofing instructions.

CHAPTER 3
MAINTENANCE INSTRUCTIONS

Section I. PREVENTIVE MAINTENANCE

16. Definition and Importance of Preventive Maintenance

a. DEFINITION. Preventive maintenance is work performed on equipment, usually when it is not in use, to keep it in good working condition so that break-downs and needless interruptions in service will be kept at a minimum. The object of preventive maintenance is to eliminate the need for trouble shooting and repair.

b. IMPORTANCE. Since the failure or inefficient operation of even one component of the equipment may cause the break-down of the entire equipment, the importance of preventive maintenance is obvious. Operators must maintain equipment placed in their charge in such condition that it will work at top efficiency at all times.

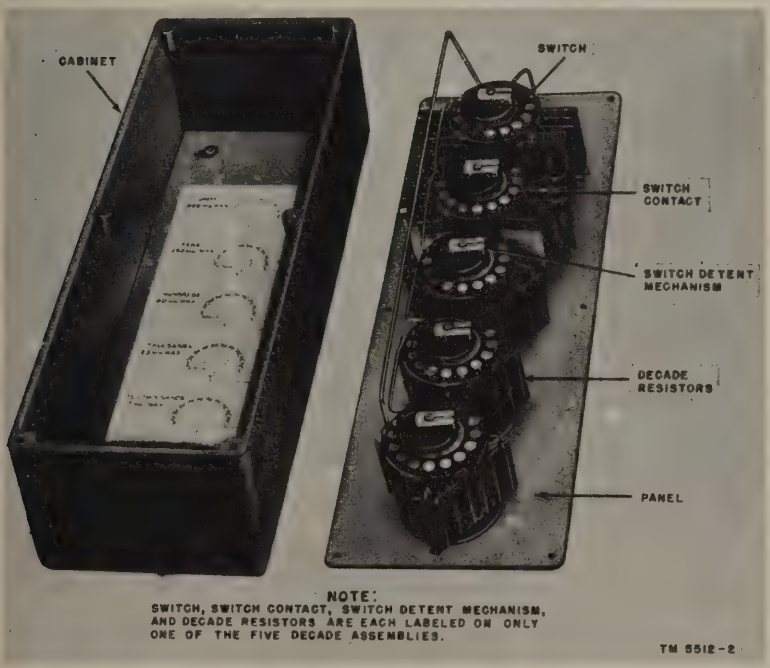


Figure 2. Decade Resistor TS-578B/U, view of chassis.

17. Preventive Maintenance Tools and Materials

Set of common hand tools.
Small paint brush.
Clean cloth.
Solvent, dry-cleaning (SD).
Oil, Lubricating, Preservative, Special (PL-Special).
Grease, general purpose, WB-2 (WB).
Small bottle of lemon oil.

18. Preventive Maintenance Checklist

The following checklist shows preventive maintenance procedures for Decade Resistor TS-578B/U.

18. Preventive Maintenance Checklist (contd)

Item No.	What to check	When to check	How to check	Precautions
1	Exterior	Weekly	Inspect visually for damaged panel or cabinet, dirt, dust, corrosion, loose or missing panel screws, loose knobs and binding posts. Tighten loose screws, knobs, and binding posts. Replace any missing panel screws.	Tighten screws snugly, but do not use force.
			Clean exterior with a dry cloth moistened with solvent (SD) to remove oil, grease, or foreign matter.	Do not rub or polish excessively because finishes may be worn off.
			Wipe dry with a clean cloth.	
			If jack-top terminal holes are clogged with foreign matter, remove the obstruction by probing with a fine wire or blowing out the openings with an air hose.	
		Annually	If engraved markings on the panel have become indistinct, use a fine brush or toothpick to fill in the characters with white or cream quick-drying enamel or brushing lacquer. Wipe off excess enamel at once. After the enamel has dried, remove with solvent (SD) any that may remain outside the characters.	
			If the panel and cabinet are dull and dirty, dampen a cloth slightly with lemon oil, and wipe off the painted surfaces. Then wipe the surfaces dry with a clean cloth until satisfactory appearance is restored.	Do not rub or polish excessively.

18. Preventive Maintenance Checklist (contd)

Item No.	What to check	When to check	How to check	Precautions
2	Interior	Annually	Remove the six screws that hold the panel to the cabinet, and separate the panel from the cabinet.	Support the panel in a level position on the knobs. Do not lay it on its side because wiring and resistors may be damaged.
			Inspect all parts of the chassis for damaged insulation, looseness, and dirt or other foreign matter. If any dust, foreign matter, or fungus is observed, clean the affected part carefully with a soft brush and solvent (SD). If insulation is damaged, clean it carefully with a soft brush, and then cover it with a light coating of varnish.	All resistor windings are made of fine insulated wire. Be very careful not to damage the windings by brushing them too hard or by bending wires or cords when cleaning. Once a wire is broken, the entire decade resistor must be returned to the factory for repair or recalibration.
			Clean switch contacts and rotors with a soft brush and solvent (SD). Apply a small amount of grease (WB) over the face of switch contacts and rotate the switches a few times to see that they turn easily.	
			Remove the small setscrew in the detent casting of each switch, and insert 3 drops of oil (PL-Special) in the opening through the fine spout of an oil can. Replace setscrews and tighten them until the detent works with the same tension as before.	Tighten firmly but not excessively.

18. Preventive Maintenance Checklist (contd)

Item No.	What to check	When to check	How to check	Precautions
			Insert the fine spout of an oil can under each switch rotor, and apply 2 drops of oil (PL-Special) to each shaft. After the oil has had time to seep into the bearing, rotate the switch several times to work the oil in. Wipe off any excess oil.	Do not apply too much oil. Do not remove switch rotors; they have been adjusted at the factory and will, if cleaned and lubricated in accordance with these instructions, last for the life of the resistor.
			Dust the inside of the cabinet with a clean cloth.	
			Inspect the resistor carefully to insure that all the preceding instructions have been followed.	
			Replace the panel on the cabinet, and insert and tighten the six panel screws.	Tighten firmly but not excessively.
			Rotate the knobs to see that they do not bind.	

Section II. LUBRICANTS AND PRESERVATIVES

19. Lubrication

No lubrication is required aside from that covered in the preventive maintenance checklist (par. 18). See paragraph 15 for lubrication when Decade Resistor TS-578B/U is used in subzero temperatures.

20. Weatherproofing

a. General. Signal corps equipment, when operated under severe climatic conditions such as prevail in tropical, arctic, and desert regions, requires special treatment and maintenance. Fungus growths, insects, dust, corrosion, salt spray, excessive moisture, and extreme temperatures are harmful to most materials.

b. Tropical Maintenance. A special moistureproofing and fungiproofing treatment has been devised which, if properly applied, provides a reasonable degree of protection. This treatment is explained fully in TB SIG 13 and TB SIG 72.

c. Winter Maintenance. Special precautions to prevent poor performance or total operational failure of equipment in extremely low temperatures are explained fully in TB SIG 66 and TB SIG 219.

d. Desert Maintenance. Special precautions necessary to prevent equipment failure in areas subject to extremely high temperatures, low humidity, and excessive sand and dust are explained fully in TB SIG 75.

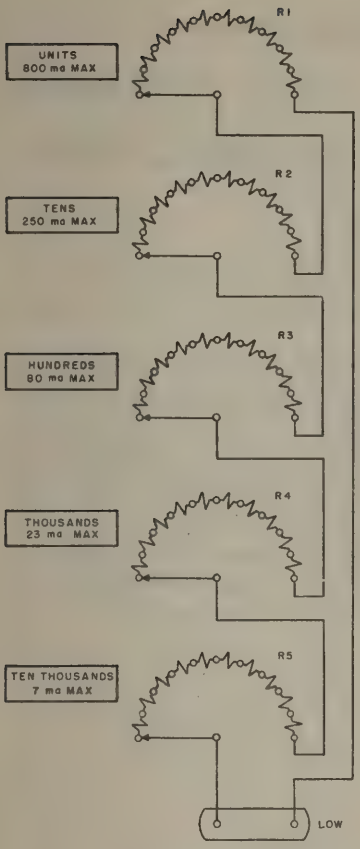
Section III. TROUBLE SHOOTING

Caution: Decade Resistor TS-578B/U is precision test equipment and should not be tampered with by operating or maintenance personnel. Any attempt to repair or replace components of the resistor may seriously impair its accuracy or make it useless.

21. Condensed Theory of Operation

a. Each decade of Decade Resistor TS-578B/U is made up of 10 separate resistors connected in series by an 11-contact rotary switch (fig. 3). When the switch is set at zero, all resistors of that particular decade are out of the circuit, and the resistance across the switch terminals may be considered as zero. The wiring of the decades presents a simple series circuit to any potential applied between the terminal binding posts.

b. A decade resistor is essentially a resistance which is variable in given steps from zero to maximum. On dc, and on ac up to 50 kc, the decade resistor may be considered as a pure resistance within the rated accuracy. If it is used on ac of a frequency above 50 kc, residual inductance and capacitance must be considered in each individual case, and it is a good plan to prepare a calibration curve for the desired frequency or frequencies. Decade Resistor TS-578B/U may be used on frequencies up to several



REF SYMBOL	RANGE	STEPS	ACCURACY
R1	0 TO 10 OHMS	1 OHM	± 0.25%
R2	0 TO 100 OHMS	10 OHMS	± 0.1 %
R3	0 TO 1,000 OHMS	100 OHMS	± 0.1 %
R4	0 TO 10,000 OHMS	1,000 OHMS	± 0.1 %
R5	0 TO 100,000 OHMS	10,000 OHMS	± 0.1 %

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Figure 3. Decade Resistor TS-578B/U, schematic diagram.

megacycles with fair accuracy. On the higher frequencies, however, the THOUSANDS and TEN THOUSANDS decades become capacitive, and the effective resistance decreases as the frequency increases. The UNITS, TENS, and HUNDREDS decades, on the other hand, become inductive at the higher frequencies, and effective resistance normally increases with increasing frequency.

22. Trouble-shooting Decade Resistor TS-578B/U

Test equipment may fail no matter how carefully it is designed, manufactured, and handled. The most common cause of failure in the case of Decade Resistor TS-578B/U is an open resistor, but trouble may also develop as the result of shorted turns, leakage across terminals or insulation, shorting because of metal-dust accumulation, or mechanical breakage. Should Decade Resistor TS-578B/U fail or become inaccurate, proceed as follows:

a. Carefully follow the instructions given in the preventive maintenance checklist (par. 18).

b. If the resistor is still inaccurate, test the individual resistors in each decade with an ohmmeter.

(1) Connect an ohmmeter of the proper range across the decade-resistor terminals.

(2) Set all decades except one at zero.

(3) Test each resistor of the decade still in the circuit, reading the ohmmeter at each setting of the decade. See figure 3 for resistor values and tolerances.

(4) Set the decade just tested at zero, and test each of the others in the same way until the fault is located or all decade units are proved perfect.

c. Replace Decade Resistor TS-578B/U as a unit when it does not function accurately after preventive maintenance has been performed, when inaccurate resistors have been discovered, or when it fails for some other reason. *Do not attempt to repair Decade Resistor TS-578B/U even when the cause of failure has been localized.* When the resistor is returned for replacement, inclose a statement indicating whether trouble is continuous or intermittent, and specifying faulty components if they have been localized.

CHAPTER 4
SHIPMENT AND LIMITED STORAGE AND DEMOLITION TO PREVENT ENEMY USE

Section I. SHIPMENT AND LIMITED STORAGE

23. Packing Equipment for Shipment

Note. When packing equipment for shipment, use the original packaging and packing material if it has been retained.

a. Place the decade resistor in a carton of appropriate size, place cushioning material around the knobs, inclose a 2-pound bag of desiccant, and seal the carton with gummed paper tape.

b. Place the carton in a moisture-vaporproofed barrier, and heat-seal the barrier securely.

c. Wrap the packaged resistor in waterproof paper, and seal the paper.

24. Repacking for Limited Storage

a. Clean the exterior of the resistor thoroughly.

b. Place the resistor in a moisture-vaporproofed barrier with a bag of desiccant, and heat-seal the barrier.

c. Store the resistor in a cool, dry place.

Section II. DEMOLITION TO PREVENT ENEMY USE

25. Methods of Demolition

a. SMASH. Use sledges, axes, handaxes, pickaxes, hammers, crowbars, heavy tools.

b. CUT. Use axes, handaxes, machetes.

c. BURN. Use gasoline, kerosene, oil, flame throwers, incendiary grenades.

d. EXPLODE. Use firearms, grenades, TNT.

e. DISPOSE. Bury in slit trenches, fox holes, other holes. Throw in streams. Scatter.

Note. Use anything immediately available for destruction of this equipment.

26. Destruction of Components

When ordered by your commander, destroy all equipment to prevent its being used or salvaged by the enemy.

a. Smash (par. 25a) the cabinet, panel, knobs, switches, resistor cards.

b. Cut (par. 25b) all resistor windings and electrical wiring.

c. Burn (par. 25c) instruction books and anything that remains after the instructions in subparagraphs a and b above have been followed.

d. Scatter or bury (par. 25e) what remains of the equipment after it has been burned.

DESTROY EVERYTHING

APPENDIX
REFERENCES

Note. For availability of items listed, check SR 310-20-3 for field manuals and JANAP's. Check SR 310-20-4 for technical manuals, technical bulletins, supply bulletins, modification work orders, and changes. Check SR 310-20-5 for Army regulations and special regulations.

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1. Regulations

a. Army.

AR 380-5	Safeguarding Military Information.
AR 750-5	(Maintenance Responsibilities and Shop Operation.) Maintenance of Supply and Equipment.

b. Special

SR 310-20-3	Index of Training Publications (Field Manuals, Training Circulars, Firing Tables and Charts, Army Training Programs, Mobilization Training Programs, Graphic Training Aids, Joint Army-Navy-Air Force Publications, and Combined Communications Board Publications).
SR 310-20-4	Index of Technical Manuals, Technical Regulations, Technical Bulletins, Supply Bulletins, Lubrication Orders, Modification Work Orders, Tables of Organization and Equipment, Reduction Tables, Tables of Allowances, Tables of Organization, and Tables of Equipment.
SR 310-20-5	Index of Administrative Publications (Army Regulations, Special Regulations, Joint Army-Air Force Adjustment Regulations, General Orders, Bulletins, Circulars, Commercial Traffic Bulletins, Joint Procurement Circulars, Department of the Army Pamphlets, and ASF Manuals.
SR 700-45-5	Unsatisfactory Equipment Report (Reports Control Symbol CSGLD-247).
SR 745-45-5 NAV DEPT SERIAL 85POO AFR 71-4	Report of Damaged or Improper Shipment (Reports Control Symbols CSGLD-66 (Army), SandA-70-6 (Navy), and AF-MC-U2 (Air Force)).

2. Supply Publications

SB 11-47	Preparation and Submission of Requisitions for Signal Corps Supplies.
SB 11-76	Signal Corps Kit and Materials for Moisture- and Fungi-Resistant Treatment.
SB 11-100	Serviceability Standards for Signal Equipment in Hands of Troops.

3. Technical Manuals on Auxiliary Equipment and Test Equipment

TM 11-2535A	Meter Test Equipment AN/GSM-1B.
TM 11-5017	Output Meter TS-585A/U

4. Painting, Preserving, Maintenance, and Lubrication

TB SIG 13	Moistureproofing and Fungiproofing Signal Corps Equipment.
TB SIG 66	Winter Maintenance of Signal Equipment.
TB SIG 72	Tropical Maintenance of Ground Signal Equipment.
TB SIG 75	Desert Maintenance of Ground Signal Equipment.
TB SIG 123	Preventive Maintenance Practices for Ground Signal Equipment.
TB SIG 219	Operation of Signal Equipment at Low Temperatures.
TM 9-2851	Painting Instructions for Field Use.

5. Packaging and Packing Information

a. Military (JAN) Specifications.

JAN-D-169 (4)	Desiccants (Activated).
JAN-P-100	Packaging and Packing for Overseas Shipment—General Specification.
JAN-P-101	Packaging and Packing for Overseas Shipment—Adhesives, Water-Resistant, for Sealing Fiberboard Boxes.

b. U. S. Army Specification.

100-2E	Marking Shipments by Contractors, Standard Specifications for Box, Fiber, Special.

c. Signal Corps Instructions.

720-7	Standard Pack.
726-15	Marking of Interior Containers (for Signal Corps Equipment).

6. Other Publications

TM 11-455	Radio Fundamentals.
TM 11-661	Electrical Fundamentals (Direct Current).
TM 11-664	Theory and Use of Electronic Test Equipment.
TM 11-676	Grounding Procedure and Protective Devices.
TM 11-681	Electrical Fundamentals (Alternating Current).

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